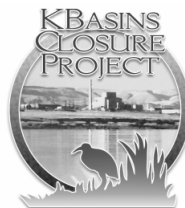




# Hanford Spent Nuclear Fuel

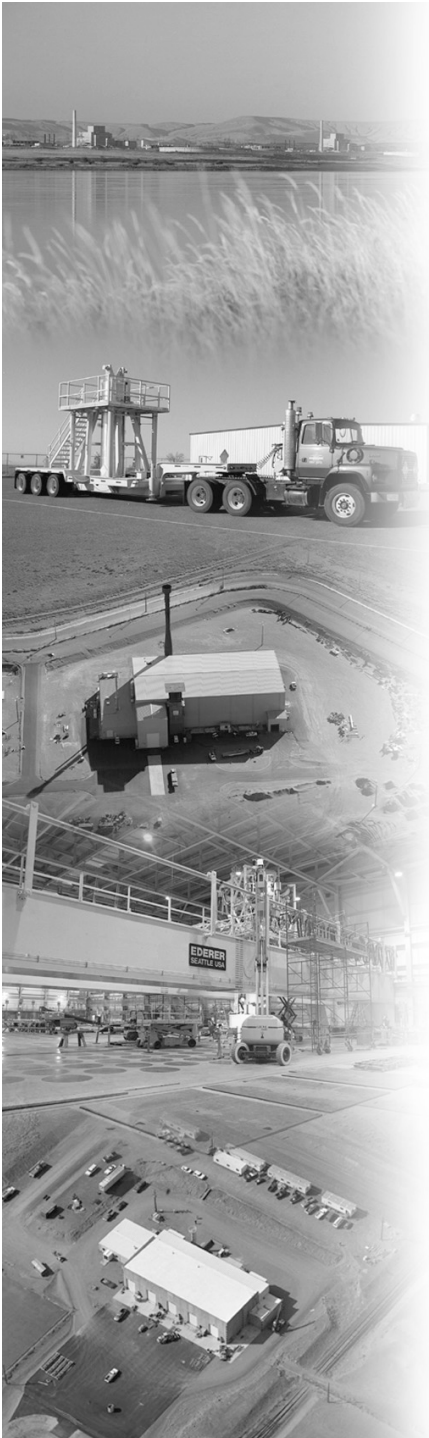
**RL McCormack  
Fluor Hanford**

October 20, 2004



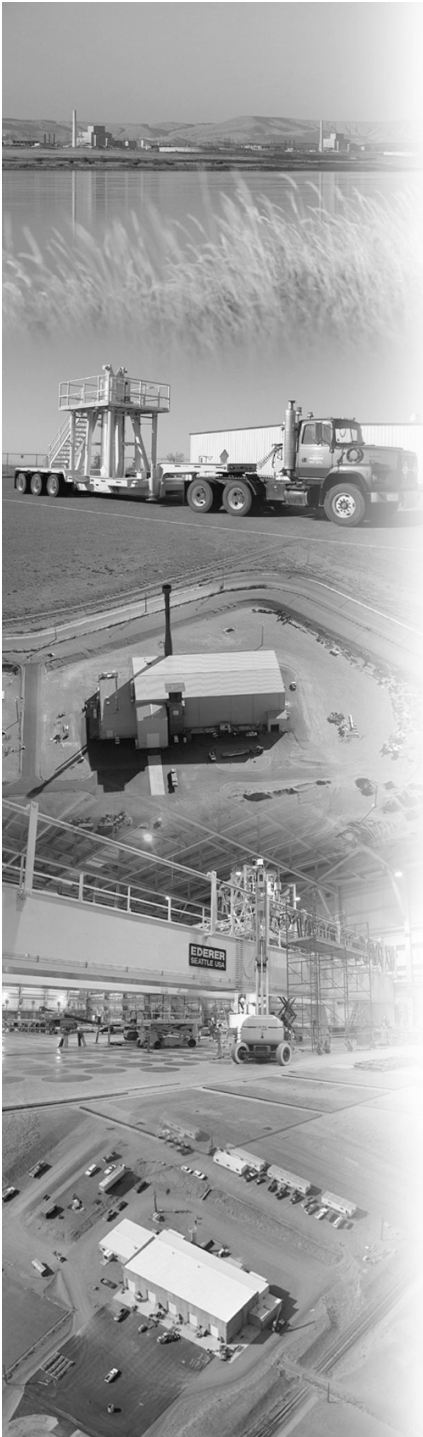
# Hanford Spent Nuclear Fuel

- K Basins Fuel Removal Progress
  - Fuel Removal Status
  - Follow-on Items
- Other Fuel Consolidation at Hanford Site
  - Shippingport Fuel
  - Fast Flux Test Facility Fuel
  - Commercial Origin Light Water Reactor Fuel
  - TRIGA Fuel
  - Miscellaneous Fuel



# K Basins Fuel Removal

- Removal of 386<sup>th</sup> Multi-Canister Overpack from K Basins completed in October 2004
  - 252 Mark IV MCOs (some contain Mark IA fuel)
  - 133 Mark IA MCOs
  - 1 Single-Pass Production Reactor MCO
- Scrap processing initiated as part of fuel removal
  - Approximately 70,000 pounds of scrap collected
  - 66 Mark IV scrap baskets used (4 MCOs contain 2 scrap baskets)
  - 1 Mark IA scrap basket used
- Additional MCO(s) anticipated for fuel, scrap discovered during sludge removal
  - Minimum 1 scrap basket currently remaining





# K Basins Fuel Removal

- Fuel Transfers from KE Basin to KW Basin completed
  - 370 FTS shipments
  - Over 3,600 fuel canisters
  - Over 50,000 fuel elements
- 259 Welded N Stamped MCOs completed
  - No defects to date



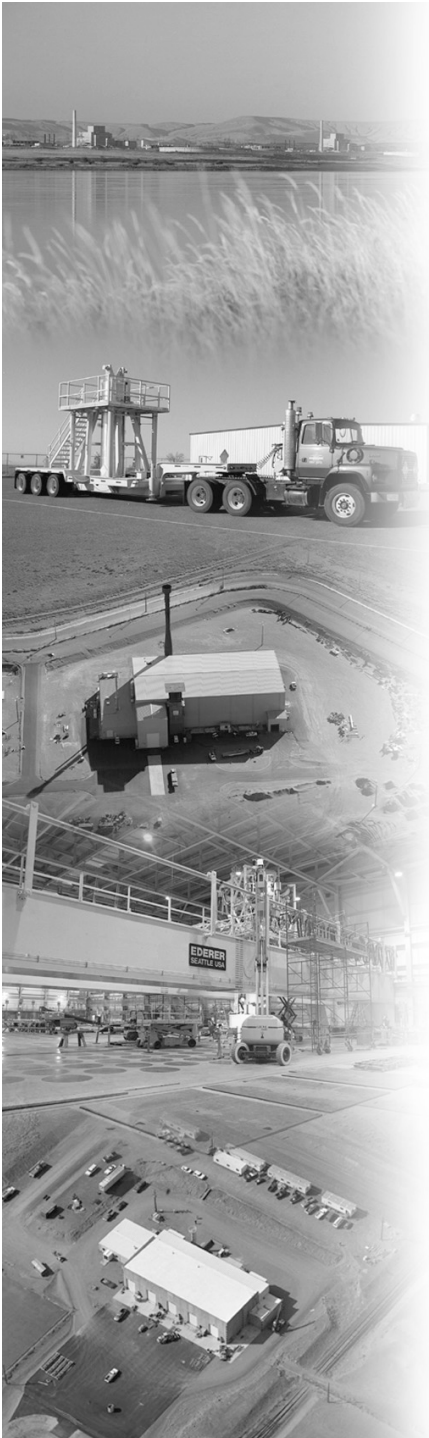


# Recent Challenges Experienced

- Most degraded fuel saved for last
  - Treatment systems not designed for sludge processing
  - Fuel stuck in canisters
  - Fuel handling tedious
  - Water visibility frequently impacted
  - Airborne problems
- Equipment designed for MCO shipments from one basin
  - Many single-point failures

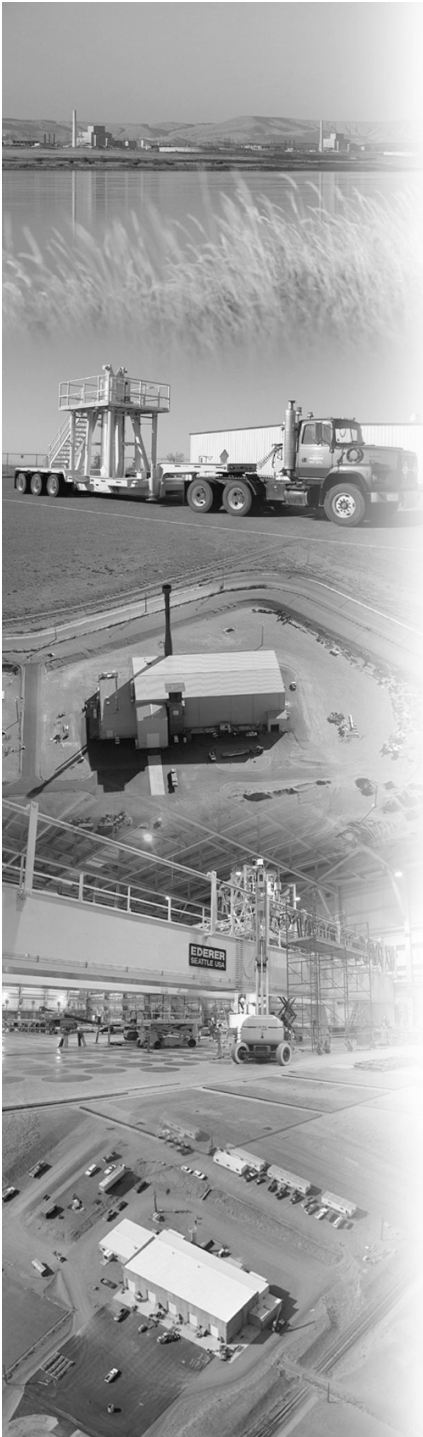
# K Basins Fuel Removal

- Follow-on Items
  - Complete MCO Welding
  - Continue MCO Sampling/Monitoring
  - Disposition Short-stack MCOs
  - Package/Process Fuel Recovered from Sludge
  - Potential to Receive Discovered Fuel from B/C Reactors



# Shippingport Fuel

- 72 PWR Core 2 Blanket Fuel Assemblies Received from Shippingport in 1978-1979. Placed in Wet Storage at T Plant Canyon
- Zircaloy clad, uranium oxide fuel (natural enrichment)

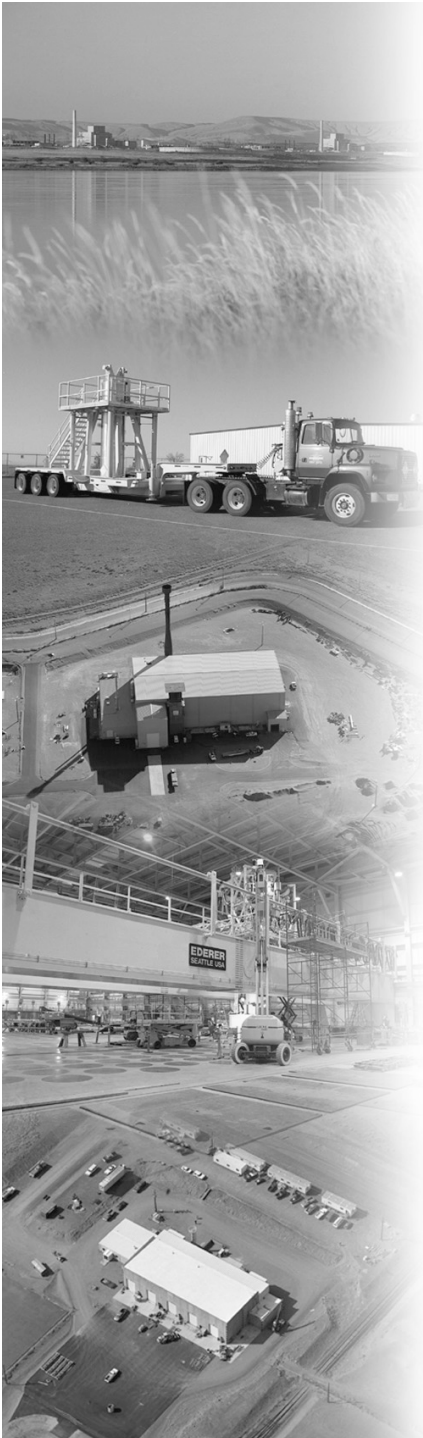


*Current wet storage of  
PWR Core 2 blanket fuel  
assemblies at T Plant.*

# Shippingport Fuel

- Initiated fuel removal and transfer to the Canister Storage Building in August 2002
- Completed transfer of all fuel in 18 MCOs with modified shield plugs (Shippingport Spent Fuel Canisters) in September 2004
- Fuel dried at T Plant to commercial fuel drying standards (NUREG-1536)
- No repackaging planned for shipment to repository

*Below: Shippinort Spent Fuel Canister shipment in MCO Cask*



# Fast Flux Test Facility Fuel

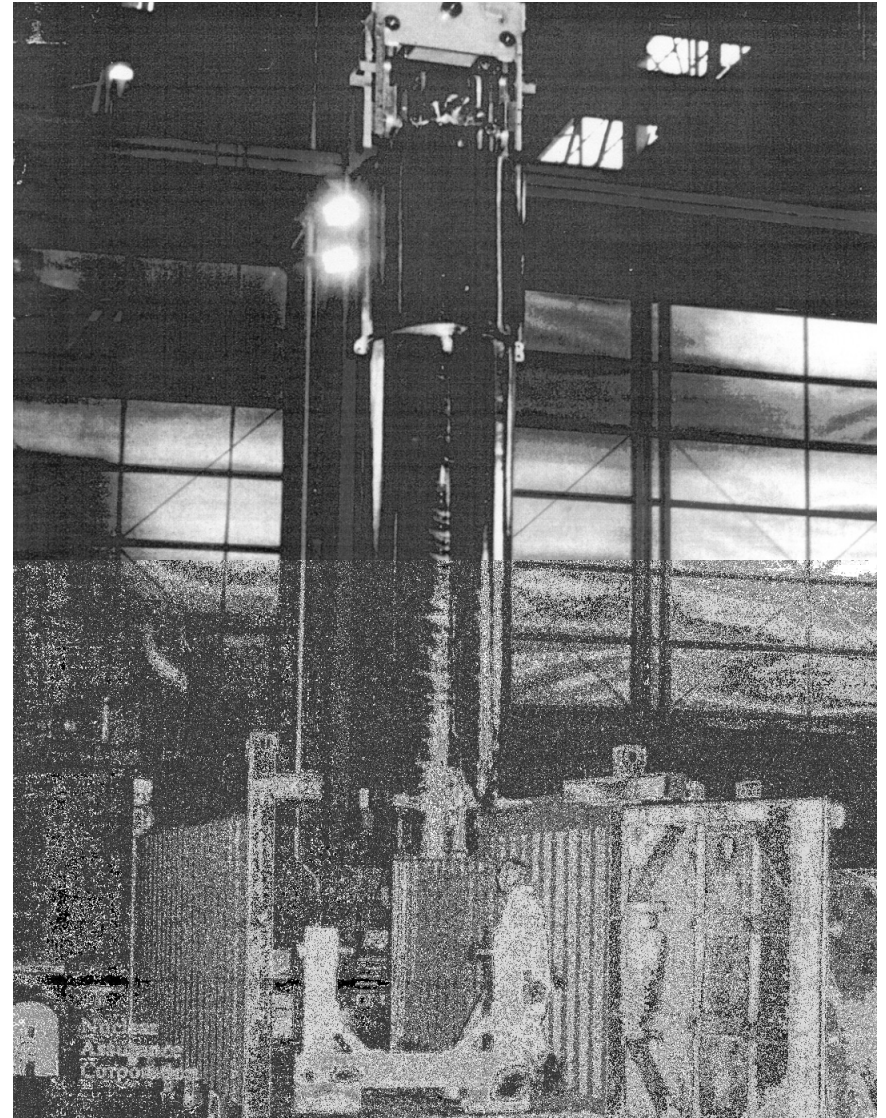
- Off-load of FFTF fuel into Interim Storage Casks over 50% complete Interim Storage Casks stored at 200 Area Interim Storage Area
- Small quantity of FFTF spent fuel at Plutonium Finishing Plant; will be transferred later to CSB
- FFTF fuel at CSB and 200 Area ISA will be repackaged into DOE Standard Canisters for repository acceptance
- Sodium bonded fuel will be transferred to ANL-W for treatment

*Right: Interim Storage Cask receipt at 200 Area Interim Storage Area*



# Commercial Origin Light Water Reactor

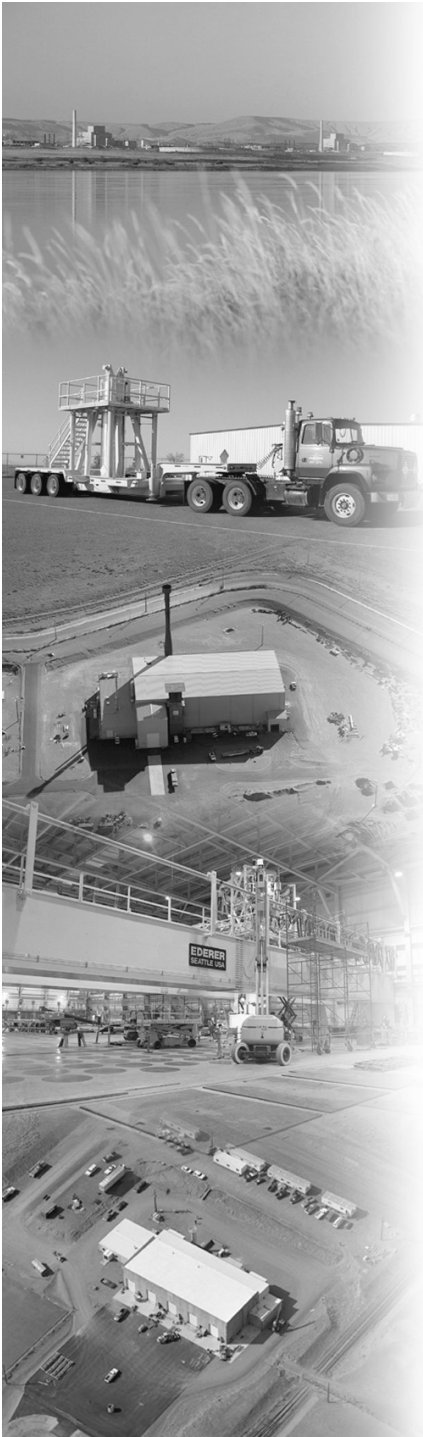
- Typical end of life PWR and BWR assemblies/pins; some commercial fuel experiments
- Received at 324 Building 1976-1986 and stored in hot cells after studies completed
- Due to 324 physical limitations, cost and schedule, use of NAC-1 casks selected for SNF interim storage





# Commercial Origin LWR

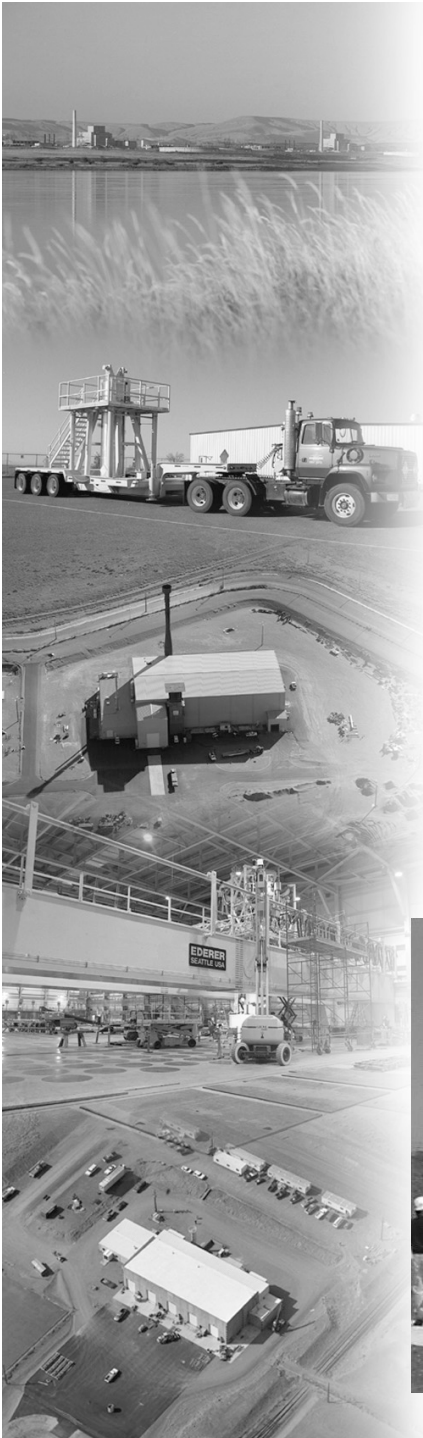
- NAC-1 casks loaded and in storage at 200 Area Interim Storage Area
- One cask holds Rod Consolidation Assembly
- Current planning assumes repackaging into Standard Canister prior to shipment to repository



# NRF TRIGA Fuel

- Fuel in storage at 200 Area Interim Storage Area since 2002
- Fuel will be repackaged in DOE Standard Canister for shipment to repository

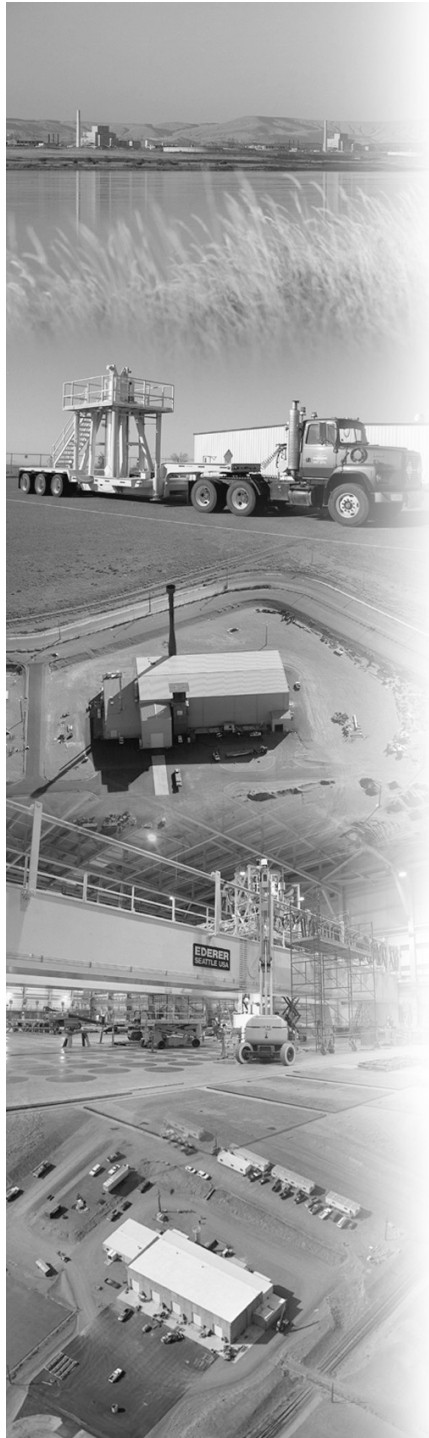
*NRF TRIGA Cask Shipment ( right),  
RadVault for TRIGA Cask storage (below),*





# Miscellaneous Fuel

- OSU TRIGA and LAMPRE fuel planned to be packaged in DOE Standard Canisters prior to shipment to repository
- Disposition path for commercial origin Reactor Irradiated Nuclear Material (RINM) must be finalized. This RINM may be dispositioned as spent nuclear fuel



*Right: EBR-II Cask containing RINM being handled at 300 Area*

